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RangeDetect Series

Using Body Condition Scores to Manage Range Cows and Rangeland

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Body condition scoring is a valuable tool for managing beef cattle nutrition. Because body condition score is directly related to reproductive ability, ranchers can improve reproductive performance by monitoring the scores of their cattle and taking action when needed.

Body condition scores can be used at critical times to:

- Determine whether supplemental feed is needed
- Identify the cows needing special attention
- Gain insight into the causes of nutritional problems

Body condition scoring is an estimation of the relative fatness or body composition of cows. Scores range from 1, for a very thin body condition, to 9, indicating extreme fatness. A cow that is average—neither thin nor fat—would have a score of 5. For information on how to estimate body condition in beef cattle, see Extension publication B-1526, "Body Condition, Nutrition and Reproduction of Beef Cows."

As an evaluation tool, body condition scoring offers several advantages over weighing cows:

- Cow weights are affected by variations in digestive tract fill, which has little effect on condition score.
- Defecation and urination near weighing time can reduce cow weights by as much as 20 pounds or more, but have little effect on condition scoring.
- Body condition scoring does not require scales, can be done without putting animals through a chute, and can be done when working cows for other routine management practices.
- Most importantly, weight is a poor indicator of condition. A small-frame, fleshy cow and a large-frame, thin cow may weigh the same but differ greatly in body condition.

By using body condition scores, producers can glean important information about the nutritional status of their cattle. Nutritional status is primarily affected by two major factors: forage quantity and forage quality. These factors vary by season, causing periodic nutrient deficiencies in cattle.

To overcome or at least reduce these seasonal nutritional deficiencies, ranchers can match the cow's periods of highest forage requirements—breeding and calving—to the range's periods of highest forage supply.

Problems with forage quantity are often related to stocking rates and stock densities. Because body condition scores indicate the amount and quality of forage that a grazing animal harvests from a specific area during a specific period, the scores can be used to determine whether stocking rates and stock densities are correct. That is, they can indicate whether the cow's nutritional needs are being met and whether the range resource can be sustained at those stocking rates and stock densities.

At calving, body condition affects milk production; calf health and vigor; potential calving problems in extremely fat heifers; and the length of time

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between calving and the first estrous cycle. Body condition scores at calving should be at least 5 and maybe even 6, depending on individual situations. Reproductive efficiency is reduced at condition scores below 5; scores above 6 at calving do not appear to be of any additional benefit.

Higher scores at calving and during breeding are related to fewer services per conception, shorter calving intervals, and fewer open cows. During the breeding season, condition scores should be maintained at or above 5 to avoid the low conception rates associated with scores below 5.

Herds compared

To learn more about trends in body condition scores for beef cattle, the Texas Agricultural Extension Service monitored the scores of four herds on three ranches over a 2- to 3-year period.

The scores were monitored monthly in:

- Two herds on the same ranch and same range sites, but in different management units in the eastern part of the Edwards Plateau. One was a fall-calving herd, the other, spring-calving
- One herd in the central Edwards Plateau
- One herd in the northern Rio Grande Plain

Additional body condition scores were obtained from a Texas Agricultural Experiment Station research project conducted in the Post Oak Savannah. These scores are presented from August through July of each year. During the first year, cows were on a summer-calving schedule (June-July). For experimental purposes, these cows were then shifted to a spring-calving schedule for the next 2 years.

Key management information for these five herds is shown in Table 1.

The quality of the forage selected by the cows in these herds was estimated using near infrared reflectance spectroscopy (NIRS) fecal analysis. The Nutritional Balance Analyzer (NutBal) computer software was used to calculate the apparent forage intake of the cows in each herd by adjusting forage intake estimations when necessary to match observed body condition scores.

Yearly trends

The yearly average body condition score was near 5 or better for all herds (Table 2), with the Post Oak Savannah herd having the highest yearlong averages. Within the Post Oak Savannah herd, the average condition scores varied among years by as much as 0.7. Average yearlong scores were lower and more variable in the eastern Edwards Plateau spring-calving herd than in the fall-calving herd on the same ranch.

However, body condition scores at the critical stages of weaning (or 90 to 100 day before calving), calving and breeding are more important to management decisions than yearly averages.

Weaning to calving

On all the ranches studied, cattle body condition scores exceeded 5 between weaning and calving (Fig. 1-6; Table 1). In fact, in all but the eastern Edwards Plateau spring-calving herd, cow condition scores exceeded 5.5 at calving. Although the eastern Edwards Plateau spring-calving herd reached an average score of almost 5.5 in December (Fig. 2), the

Table 2. Average yearly body condition scores for case study ranches during 2 to 3 years of observation.

	Year		
Ranch/Herd Location	**1**	**2**	**3**
Eastern Edwards Plateau Fall-Calving	5.2	5.4	5.4
Eastern Edwards Plateau Spring-Calving	4.7	5.2	4.9
Central Edwards Plateau	5.5	5.2	
Rio Grande Plain	4.9	5.0	
Post Oak Savannah	6.1	7.0	6.5

Table 1. Weaning periods and major calving and breeding months.

Ranch/Herd Location	Wean	Calve	Breed
Eastern Edwards Plateau Fall-Calving	May	October	December 22-January 21
Eastern Edwards Plateau Spring-Calving	October	March	May 22-June 21
Central Edwards Plateau	December	May	July 22-August 21
Rio Grande Plain	August	January	March 24-April 23
Post Oak Savannah Summer-Calving	January	June	August 22-September 20
Post Oak Savannah Spring-Calving	October	March	May 22-June 21

cows were unable to hold this condition until calving because of low forage availability.

From February through August, condition score trends were generally positive for cows in the eastern Edwards Plateau fall-calving herd (Fig. 1). They were also positive from August through November for the eastern Edwards Plateau spring-calving herd (Fig. 2). The scores of cows in the central Edwards Plateau herds increased slowly and steadily from January through April (Fig. 3).

Trends for cows in the Rio Grande Plain herd were generally positive to neutral from April through January. The largest monthly increases were in May and August (Fig. 4). These condition scores rose because rainfall increased the amount of forage available.

For the summer-calving schedule, condition scores in the Post Oak Savannah herd rose after weaning in January (Table 1; Fig. 5). Cows lost condition after weaning from November through February under the spring-calving schedule because forage quality declined. However, this loss was less than that during the same season with the summer-calving schedule.

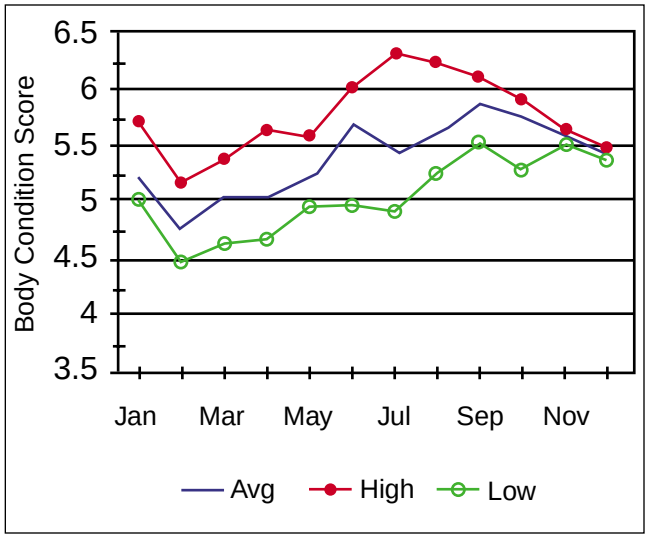

Figure 1. The body condition score profile for a fall-calving herd in the eastern Edwards Plateau showing the herd 3-year monthly average and the highest and lowest monthly herd averages during the 3-year period.

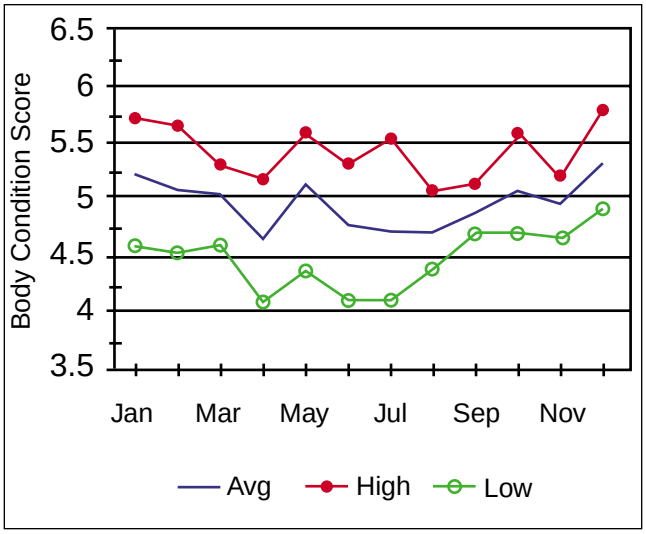

Figure 2. The body condition score profile for a spring-calving herd in the eastern Edwards Plateau showing the herd 3-year monthly average and the highest and lowest monthly herd averages during the 3-year period.

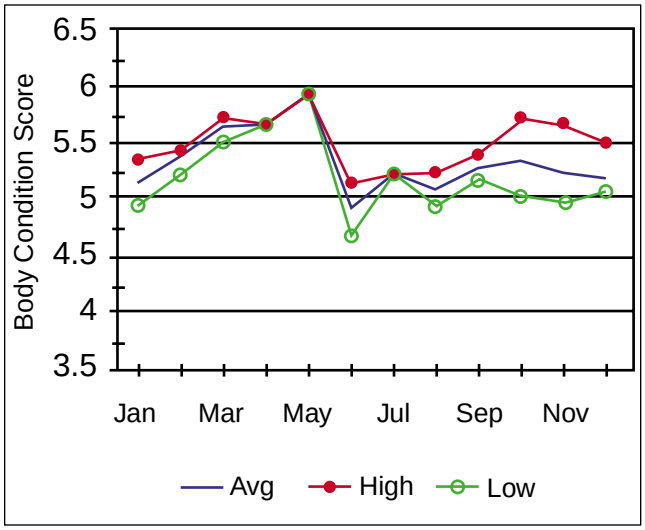

Figure 3. The body condition score profile for a May-calving herd in the central Edwards Plateau showing the herd 2-year average and the highest and lowest monthly herd averages during the 2- year period.

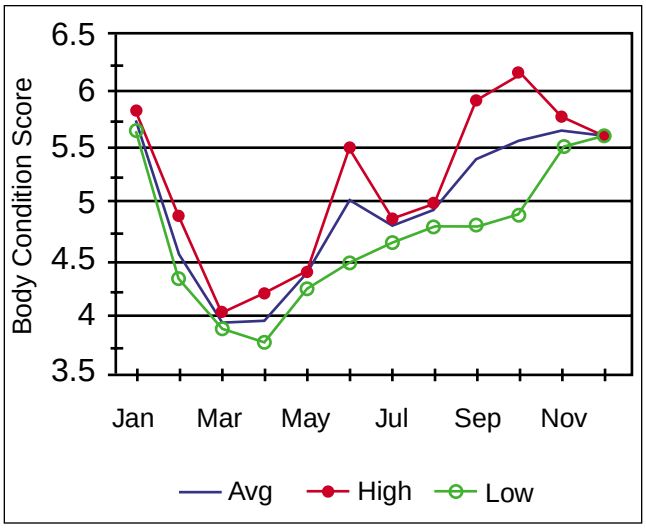

Figure 4. The body condition score profile for a winter-calving herd in the northern Rio Grande Plain showing the herd 2-year average and the highest and lowest monthly herd averages during the 2-year period.

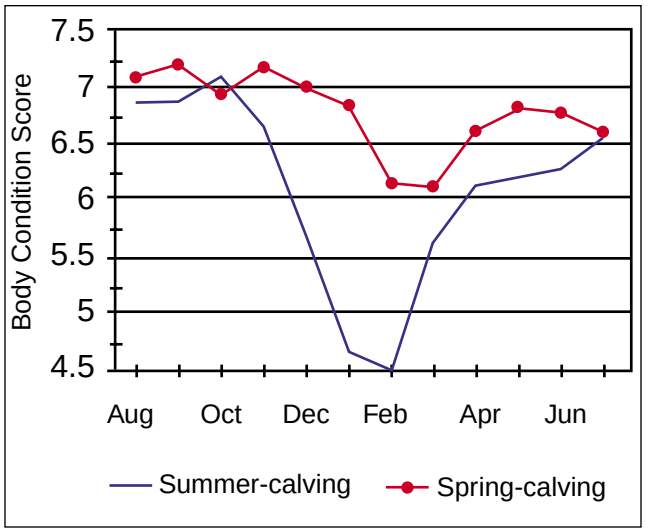

Figure 5. The body condition score profile for a cattle herd in the Post Oak Savannah. The summer-calving profile is for 1 year. The spring-calving profile represents the average of 2 years.

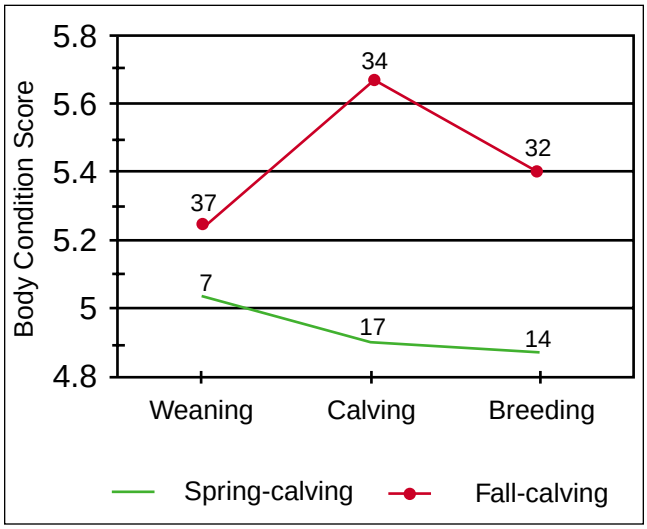

Figure 6. The relationship between stock density (acres per animal at a given time) and a 3-year average for body condition scores at weaning, during the calving season, and during the breeding season for the Eastern Edwards Plateau (EEP) herds. Numbers above the lines indicate the average stock density for the period in acres per cow.

Calving to breeding

Changes in condition score varied among herds after calving. The eastern Edwards Plateau fall-calving herd lost an average of 0.3 condition score from calving to breeding (Fig. 6) because forage quality declined. In comparison, the eastern Edwards Plateau spring-calving herd lost only about 0.1 condition score during this period because forage quality and quantity improved.

The central Edwards Plateau herd lost a full condition score immediately after calving in May (Fig. 3). The Rio Grande Plain herd lost almost 2 condition scores in the 2 months immediately after calving in January (Fig. 4). The condition scores dropped in both herds because forage availability decreased.

Under the summer-calving schedule, body condition dropped steadily in the Post Oak Savannah herd after the breeding season, from about 7 in September to 4.5 in February (Fig. 5). This drop was related to declining forage quality. For the 2 years this herd was observed under the spring-calving schedule, cows gained condition immediately after calving in March.

Management implications

The eastern Edwards Plateau fall-calving herd demonstrated that a fall-calving herd needs to reach a body condition score of better than 5 at calving to compensate for the loss from calving to breeding and to keep cows above a 5 condition score during breeding.

The eastern Edwards Plateau spring-calving herd was able to maintain nearly a 5 condition score from weaning to calving to breeding. This herd actually increased to more than a 5 condition score in December after weaning, but was unable to hold this condition.

Comparisons of apparent forage intake for these two herds suggests that the spring herd did not have enough forage from December through February. In December, for example, apparent forage intake (27 pounds per day) for the fall herd was almost as much as the expected forage intake (29 pounds per day) and almost twice as much as the apparent forage intake (16 pounds per day) for the spring herd.

This comparison suggests that more forage was available for the fall herd. This difference in forage availability appears to have been related to stocking rate and stock density (acres per animal at a point in time). The stock density was two to five times higher (fewer acres per animal) for the spring herd than for the fall herd (Fig. 6) at weaning, calving and breeding.

Although the spring herd maintained a condition score of about 5, there was no room for error. To provide more forage to improve body condition and reduce risk in these kinds of circumstances, producers can reduce stock density during the weaning-to-calving period. In addition, to avoid damage to forages and soils, the range resource should be monitored closely when it has high stock densities, such as those in the spring herd.

The central Edwards Plateau herd was in satisfactory condition for most of the year. This ranch was moderately stocked. Based on total acres, the stocking rate was about 40 acres per cow. Based on estimated grazeable acres, accounting for brush areas with little to no forage production to support cattle, the stocking rate was about 25 acres per cow.

However, the drastic condition score loss immediately after calving appeared to be related to forage availability, because in May, forage quality is usually relatively high. In such situations, the cows should be provided more access to forage to reduce this condition score loss and to create an additional buffer against unpredictable circumstances such as drought.

Loss of condition score after calving in the Rio Grande Plain herd also appeared to be related to forage availability. The stocking rate on this ranch was about 65 acres per cow, based on total acres. However, the ranch was heavily covered with South Texas brush, which reduced grazeable acres, making the effective stocking rate about 16 acres per cow.

One approach to this problem for this ranch would be to open some of the brushy areas to increase forage production and availability. Supplemental feeding during this period should be used to slow the condition score loss rather than to try to eliminate it, because elimination would not be economically feasible.

The Post Oak Savannah herd demonstrates the effect of timing the calving season to match forage quality and quantity. In the summer-calving schedule, extreme condition score loss occurred from fall to winter. The loss should not have affected reproduction because cows would have been bred in August and September. However, this kind of loss in condition could reduce milk production and thus calf performance.

Under the spring-calving schedule, fall condition loss was much less than under the summer schedule. Those cows even gained condition immediately after calving. The high condition scores observed with the spring-calving schedule suggests that the stocking rate for this herd could be increased if key forage species are not being overused.

Recommendations

Keeping condition score records over a period of years can provide a basis for understanding what is happening and what can be expected on an individual ranch.

- Use body condition scoring routinely.
- At a minimum, condition score at weaning (or at 90 to 100 days before calving), at calving, and during the breeding season.

Make the best use of the ranch's forage resources. Remember that forage is the most economical source of nutrients for a grazing animal.

- Schedule calving and breeding seasons to match the periods when forage quality and quantity from the range can best provide nutritional requirements and achieve desired condition scores.
- Matching cattle requirements with nutrient supplies from forage is the most economical management approach.

Use body condition scoring to make the best use of supplemental feeding. Because forage conditions can change rapidly in range situations, condition scores at weaning and calving provide a guide for managing cows to maintain good condition through subsequent calving and breeding seasons.

- Before calving, sort and feed cows according to condition score.
- At weaning (or 90 to 100 days before calving), condition scores can be used to determine the gain required to attain the target body condition score of 5 to 6 at calving.
- Using supplemental feeding to promote gains in condition score is economically feasible only from weaning to calving.
- At other times, supplemental feeding should be used only to maintain condition or to reduce condition score loss.

Many ranches use a fall-calving season in addition to spring calving to reduce the number of bulls needed and to provide an additional marketing period for calves. However, fall-calving requires special management.

- Fall-lactating cows are at risk of nutritional stress from declining forage quality.
- Fall-calving requires lighter stocking rates/densities so that cows will be in condition score above 5 at calving and then at least condition score 5 during breeding.

Condition scores before calving, at calving and at breeding also provide insight into problems with forage quality and quantity. Understanding whether the source of a nutritional problem is forage quality or forage quantity can help producers determine the appropriate management approach to solve the problem.

Condition scores can also provide insight into resource management. For example, if cows cannot achieve and maintain target condition scores without excessive feed inputs, the stocking rate or stock density needs to be lowered. If this situation exists, the preferred, productive forage species or preferred range sites are probably being overused, or general overuse is occurring. In either case, adjustments in stocking rate or stock density are needed to protect the resource from long-term damage.

For more information on body condition scoring and related topics

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